National Institute of Environmental Health Sciences

The impact of smoke on respiratory hospital outcomes during the 2002-2003 bushfire season, Victoria, Australia

Author(s): Tham R, Erbas B, Akram M, Dennekamp M, Abramson MJ
Year: 2009
Journal: Respirology (Carlton, Vic.). 14 (1): 69-75

Abstract:

BACKGROUND and OBJECTIVE: Uncontrolled bushfires produce copious amounts of smoke that can result in adverse effects on human health and so are important considerations for emergency, public health and environmental protection agencies. During January to March 2003, the north-east and Alpine regions of the state of Victoria experienced major bushfires that created a blanket of smoke over the entire state for extended periods of time. This study aimed to explore the daily trends in air pollutants and temporal correlations with changes in respiratory outcomes and to determine whether variation in particulate matter < 10 microm (PM(10)), visibility-reducing particles and ozone produced by bushfires could explain variation in respiratory outcomes. METHODS: A time-series ecological study was conducted using hospital admission and emergency attendances, air quality and meteorological data. A semi-parametric overdispersed Poisson regression model was used to evaluate the effect of air pollutants. RESULTS: In a semi-parametric analysis of respiratory outcomes adjusted for day-of-the-week and trend effects, only daily levels of PM(10) were strongly associated with emergency department attendances and weakly associated with hospital admissions. CONCLUSIONS: Elevated levels of PM(10) increase the risk for exposed people to attend emergency departments for respiratory conditions. The health effects of bushfire smoke need to be considered when planning health and emergency services and designing public health messages.

Source: http://dx.doi.org/10.1111/j.1440-1843.2008.01416.x

Resource Description

Exposure :

weather or climate related pathway by which climate change affects health

Air Pollution, Extreme Weather Event

Air Pollution: Ozone, Particulate Matter

Extreme Weather Event: Wildfires

Geographic Feature:

resource focuses on specific type of geography

Mountain, Ocean/Coastal, Rural, Urban

Geographic Location:

resource focuses on specific location

Non-United States

Non-United States: Australasia

Health Impact: ☑

specification of health effect or disease related to climate change exposure

Respiratory Effect

Respiratory Effect: Asthma, Bronchitis/Pneumonia, Chronic Obstructive Pulmonary Disease, Other Respiratory Effect

Respiratory Condition (other) : chronic bronchitis; emphysema; bronchiolitis

Population of Concern: A focus of content

Population of Concern: ☑

populations at particular risk or vulnerability to climate change impacts

Children

Resource Type: ☑

format or standard characteristic of resource

Research Article

Timescale: ☑

time period studied

Time Scale Unspecified